AluVET

# COMPETENCE TESTS

for VET Trainers and Students in

**Aluminium Industry**

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# Aluminium Focused Light Metals Vocational Training Module Development

## Task 1.3 - Competence Tests for VET Trainers and Students

# COMPETENCE TESTS

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| **Project Name:** | **Vocational Education and Training for Aluminium Sector** |
| **Project Acronym:** | **AluVET** |
| **Task Related:** | **Intellectual Output 1 - Aluminium focused Light Metals Vocational Training Module Development** |
| **Project Coordinator:** | **Istanbul Ferrous and Non-ferrous Metals Exporters' Association** |
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**Content**

## 1. Introduction

Aluminium is a strategic (or important industrial) material in Europe used in a variety of sectors such as automotive and transport, aerospace, electronics, building and construction, packaging and consumer goods.

AluVET project covers the creation of a most needed training program by the metal sector namely light metals – aluminium production and design processes which are absent in metal technologies and metallurgy technologies VET modules on high school level of participating countries.

The problem faced in current vocational training is the existing programs are for general purposes and only cover basic information. Another important problem with these programs is that they do not have any or sufficient experience in the trainers in the institutions providing the relevant training and there is no digital and soft skills competence or training workers and students can benefit from.

The general objective of the action is;

To increase the light metal / Aluminium focused proficiencies of metal technology professional educators and students with the new industry needs-based training program supporting the curriculum.

The specific objectives of the action are;

- Increasing the sectoral and digital awareness of trainers and students and developing new programs in the light metals sector.
- Filling the vocational competence gap between Vocational Education and training providers and industry representatives.
- Providing an online, interactive training platform that is in line with ECVET standards and up-to-date sectoral needs.
- Providing an up-to-date Toolbox platform used in aluminium industry downstream production and on-the-job observation service points for VET Scholars, trainers as well as students, blue-collars and aluminium industry representatives.

## 2. Summary of the Action

Prior to the project, the project consortium has made focus group meetings to determine what is needed in metal technologies, specifically, light metals sector vocational education.

Current vocational education certifications or high school level curriculums do not contain light metals training programs such as Aluminium Facade Systems and Aluminium Rolling products as an option. However, these competencies require an intense module structure with work-based learning aspects. The feedback we have got from the industry covering all the participating organizations were;

- Newly Graduated do not know the principles of light metals technologies

- The blue collars who are in the workplace do not know the production processes and workplace as well as occupational health and safety applications.
- Vocational training programs are being prepared for general purposes in Metal Technologies and cover only the basic information that is insufficient in terms of content and number and are not based on sectoral needs

Therefore, with this intellectual output, the AluVET project will design industrial needs-based training modules for light metals to fill sectoral HR needs in the sector.

The output will be an innovative approach to the current Metal technologies curriculum at both national levels and be aligned to The ECVET alignment will improve the transferability of the output by providing appliance chance in any European Vocational Education and Training institution. After alignment, the mentioned modules will be offered also to the National Ministry of Education. Acceptance of the modules will be left to the national authorities, however, in case of the intention of alterations to the present curriculum, project partners will provide support to the process.

The mentioned light metals modules will be specific and explain metal industries from a different perspective also containing Glass, Iron, Steel, and Construction perspectives. The module will contribute to the downstream procedures of light metals design.

## 3. What Are Competence Tests?

A competence test is an assessment or evaluation designed to measure an individual's proficiency, skills, knowledge, or capabilities in a specific area or subject. These tests are often used to determine whether an individual possesses the necessary qualifications or abilities to perform a particular task, job, or function.

Competence tests can vary widely depending on the context and purpose. They may be administered in educational settings, professional environments, or even for personal development purposes.

One of the prevailing challenges within the realm of the light metals industry pertains to the absence of a comprehensive competence assessment for blue-collar workers. This assessment is crucial in determining whether these workers possess the requisite skills and expertise to effectively contribute to the industry. To address this gap and gain a comprehensive understanding of students' proficiencies in the light metals sector, as well as to identify any deficiencies within the existing vocational framework, collaborative efforts will be undertaken to develop comprehensive competence tests. These tests were crafted in close partnership with industry experts and representatives. Additionally, a proficiency evaluation for trainers was meticulously designed. This initiative aims to enhance trainers' awareness of existing curriculum gaps, thereby fostering a more adept and well-prepared workforce.

## 4. Who Is This Document For?

These competence tests are designed for individuals who are either currently working in or aspiring to work in various roles within the aluminium industry. These tests aim to assess and

measure the skills, knowledge, and capabilities of individuals in relation to the aluminium sector. The intended population for these competence tests may include:

- **Blue-collar Workers:** These tests can be tailored for workers involved in hands-on tasks within the aluminium industry, such as machine operators, welders, fabricators, assemblers, and technicians.
- **Technical Professionals:** Engineers, metallurgists, chemists, and other technical professionals working in roles that require specialized knowledge of aluminium production, processing, or applications.
- **Supervisors and Managers:** Those responsible for overseeing operations, managing teams, and making decisions within aluminium manufacturing, processing, or related fields.
- **Students and Apprentices:** Individuals pursuing education or training programs related to the aluminium industry, such as vocational or technical schools, apprenticeships, or academic institutions offering courses in metallurgy, materials science, or engineering.
- **Trainers and Instructors:** Educators responsible for imparting knowledge and skills related to the aluminium sector. The competence tests for trainers can help ensure they are equipped to effectively teach and guide their students.
- **Industry Professionals Seeking Certification:** Workers who want to validate their skills and expertise through formal certification processes recognized within the aluminium industry.

The goal of these competence tests is to provide a standardized and objective measure of an individual's proficiency in various aspects of the aluminium sector. This can contribute to better workforce development, job placement, and overall industry growth by ensuring that individuals possess the necessary skills and knowledge to excel in their respective roles within the aluminium industry.

## 5. Competence Test for Trainers

- Please choose the right answers of the questions. Every question has only one true answer. In the first 6 questions, you must choose whether the given statement is true.

**1.** A porthole die is used to extrude solid sections.

a) True
b) False

**2.** A Profile can be extruded open and then rolled to the final shape.

a) True
b) False

**3.** Hot rolling creates even fine grains.

a) True
b) False

**4.** Drag tails are inclusions pulled out by rolling.

a) True
b) False

**5.** Aluminium Oxide is a good electrical conductor.

a) True

b) False

**6.** The melting temperature of alumina is lower than that of aluminium.

a) True
b) False

**7.** Why is the facade applied?

a) For energy efficiency
b) To protect from the outside environment
c) Because it looks beautiful
d) Because it is in accordance with human nature
e) All

**8.** How many classes are divided into aluminium curtain wall systems according to the type of glass application?

a) 1 b) 2 c) 3 d) 4 e) 5

**9.** How many points does the aluminium control consist of, regarding extrusion quality?

a) 3
b) 4
c) 5
d) 6
e) 10

**10.** How is the hardness of the profiles controlled quickly after the thermal treatment at the production site?

a) Webster's method
b) By Brinell hardness method
c) Vickers hardness method
d) Rockwell hardness method
e) Bending method

**11.** Which of the following is not one of the general defects regarding rolling?

a) Surface irregularities
b) Barrel
c) Non-metallic inclusions
d) Alligator Cracks
e) Waviness

**12.** Which of the following conventional destructive testing techniques does not include?

a) Rupture test
b) Radiography
c) Bending test
d) Hardness test
e) Tensile test

**13.** What is the most common unsuitability in the aluminium extrusion working environment?

a) Over-stacked pallets

b) Over-stacked molds
c) Over-stacked extrusion equipment
d) Over-stacked profiles
e) Over-stacked packaging materials

**14.** In which of the following can burrs occur on the aluminium profile?

a) In the profile at the exit of the press
b) In the profile remaining at the mold exit
c) In the profile with a length cut
d) In the profile stacked on the conveyor
e) In the profile prepared for shipment

**15.** What is the true matching of the following options?

A. Type of rolling
B. Harmful gases
C. Fire hazards
   1) Nitrogen oxides and chronium
   2) Involved in repairs or hydraulic systems
   3) Cold

a) A-1, B-3, C-2
b) A-2, B-1, C-3
c) A-3, B-1, C-2
d) A-3, B-2, C-1
e) A-3, B-1, C-2

**16.** Which is not one of the key digital competencies?

a) Digital content creation
b) Problem-solving
c) Video recording
d) Digital content creation
e) Information and data literacy

**17.** Which is or are among the advantages of online information research?

a) Convenience
b) Cost saving
c) Wider information
d) saving on time
e) All

**18.** Which is not one of the steps of L.O.S.E.R Process?

a) Leadership
b) Cooperation
c) Objectives
d) Empowerment
e) Resources

**19.** Which is not true?

a) Empowerment plays no part in the role of Digital Literacy in the workplace.

b) It is advisable to learn use YouTube and TikTok to become Digitally Literate.
c) The LOSER process is a practical option for delivering Digital Skillsets in an organisation.
d) According to BAE Systems research, there is a consensus that a Digital Advantage is a Competitive Advantage.
e) According to the Timberley Model, Psychology is the root concept of a Digital Mindset.

**20.** Which is not one of the four stages of a digital attack?

a) Survey
b) Damage
c) Breach
d) Affect
e) Delivery

**21.** Which of the following is or are true?

I. Digital Security and Cyber Security are the same concept, just with a different name.
II. Most organisations restore operations after a security breach within 24 hours.
III. The percent of organisations that actually experience an impact of a breach has been consistently falling.
IV. "End Point Monitoring" is part of the UEBA security framework.

a) I, II and III
b) I and IV
c) II, III and IV
d) III and IV
e) II and IV

**22.** Which of the following are considered to be attributes of Punctuality?

a) Untidy
b) Conscientious
c) Outgoing
d) Resilience
e) Agility

**23.** Which is not true?

a) Motivation is an internal process.
b) The essence of motivation is energized and persistent goal-directed behaviour.
c) Better customer service is not one of the benefits of highly motivated employees.
d) Optimal motivation is intrinsic and is dependent on choice, connection and competence.
e) Dopamine is known for making us feel good and improving our moods.

**24.** Which of the following is or are among the nine ways to motivate?

I. Create and engage in Meaningful Work

II. Build a culture of belonging
III. Invest in the growth of employees
IV. Open communication
V. Manage effectively

a) I and IV
b) II, III and IV
c) I, III and V
d) II and V
e) All

**25.** What is the true matching of each basic rule of business ethics with its definition?

A. Honesty B. Integrity C. Confidentiality

1. Maintaining confidentiality of sensitive information

2. Being truthful and transparent in business dealings

3. Adhering to moral principles and values

a) A-3, B-1, C-2
b) A-2, B-1, C-2
c) A-2, B-3, C-1
d) A-1, B-3, C-2
e) A-3, B-2, C-1

- **Answer Key:**

| | | | | |
|---|---|---|---|---|
| 1. B | 2. A | 3. B | 4. B | 5. B |
| 6. B | 7. E | 8. B | 9. B | 10. B |
| 11. E | 12. B | 13. D | 14. C | 15. C |
| 16. C | 17. A | 18. B | 19. A | 20. B |
| 21. C | 22. B | 23. C | 24. E | 25. C |

## 6. Competence Test for Students

- Please choose the right answers of the questions. Every question has only one true answer. In the first 6 questions, you must choose whether the given statement is true.

**1.** The ability to be extruded sets aluminium apart from other metals.

c) True
d) False

**2.** Channel sections exhibit a longitudinal grain flow.

a) True
b) False

**3.** Hot rolling can be used to produce thin strip below 2mm thickness.

c) True
d) False

**4.** Recrystallisation occurs doing cold rolling.

a) True
b) False

**5.** Welding process times of aluminium are slower than those of steel.

c) True
d) False

**6.** Shrinkage is contraction.

a) True
b) False

**7.** What is a facade?

a) Front side
b) Direction side
c) Intellectual togetherness
d) The war zone
e) All

**8.** Which of the following is not one of the curtain wall application stages?

a) Deciding on the type of curtain wall
b) R&D
c) Projecting
d) Application – assembly
e) Development

**9.** For whom is quality essential?

a) Customer
b) Manufacturer
c) Practitioner
d) Marketer
e) All

**10.** Which surfaces of the profile are important in the manufacture of aluminium profiles?

a) All surfaces
b) Upper surfaces
c) Side surfaces
d) Visible surfaces
e) Surfaces to be coated

**11.** Which of the following is not one of the advantages of hot working?

a) Large amount of forming is possible
b) Lower forces and power are required
c) Forming of low ductility materials
d) Lower accuracy and surface finish
e) No additional annealing is required

**12.** Which of the followings is or are types of distortion regarding welding?

I. Transverse contraction,
II. Angular Change
III. Rotational Distortion
IV. Longitudinal Tension

V. Longitudinal Bending Distortion
VI. Buckling Distortion

a) I, III and V
b) I, II, IV, and V
c) II, IV, and VI
d) II, III, and IV
e) I, II, III, IV, V and VI

**13.** Which of the following is or are parties of occupational health and safety?

a) Employees
b) Employers
c) Families
d) Relatives
e) All

**14.** What is Aluminose?

a) Lung disease
b) Heart disease
c) Stomach disease
d) Kidney disease
e) Spleen disease

**15.** Which of the following is or are true?

I. Heat stress diseases are a concern, but workers in modern mills usually are protected through the use of air-conditioned pulpits.
II. Hard hats, safety shoes, gaiters, arm protection, gloves, eye shields and goggles should be worn to meet the appropriate risk.
III. These coils can only be shipped to customers.
IV. Mechanization has reduced the number of trapping points at machinery but they still exist, especially in hot rolling plants and in finishing departments.

a) I, II and III
b) I, III and IV
c) III and IV
d) II and IV
e) II, III and IV

**16.** Which is not true about the Internet?

a) It is a worldwide communication network.
b) It can be accessible via computers or other intelligent devices.
c) There is no need to internet for online research.
d) Search engines can be used to reach websites.
e) Not all information on the Internet is reliable.

**17.** Which is or are the most used applications in the aluminium sector?

a) CAD programmes
b) Simulation programmes
c) Analysis programmes
d) Office programmes
e) All

**18.** Which is not one of the skillsets in the workplace?

a) Delivery
b) Understanding
c) Empowerment
d) Communication
e) Alignment

**19.** Which is not one of the steps of Need-Want Process?

a) Needs
b) Wants
c) Challenges
d) Commitment
e) Flexibility

**20.** Which is or are a part of security policies?

a) Review
b) Objectives
c) Digital Security Practices
d) Scope
e) All

**21.** Which is not one of the types of malware?

a) Spyware
b) Clones
c) Logic Bombs
d) Worms
e) Bots & Botnets

**22.** Which of the following is or are the benefits of dependability?

a) Improved Business results
b) Personal growth
c) Better relations within the workplace
d) Increased Self–esteem
e) All

**23.** Which of the following can complete this sentence: Motivated employees can benefit the organization they are employed by in … ?

a) Higher productivity
b) Positive company reputation
c) More holidays
d) Great company culture
e) All

**24.** What are the psychological needs that are innate within us?

a) Food, Water and Warmth
b) Security, Safety and Rest
c) Autonomy, Relatedness and Competence
d) Prestige, Accomplishment and Potential
e) Self confidence

**25.** Which of the following is true?

a) The basic rules of business ethics include honesty, integrity, and confidentiality.
b) Organizational ethics is concerned with the ethical behaviour of individual employees within a company.
c) Personal ethics and professional ethics are completely separate and have no overlap.
d) Compliance with legal and regulatory requirements is enough to ensure ethical behaviour in a company.
e) Business ethics does not affect the motivation of workers.

- **Answer Key:**

| | | | | |
|---|---|---|---|---|
| 1. A | 2. A | 3. A | 4. A | 5. A |
| 6. A | 7. A | 8. E | 9. A | 10. D |
| 11. D | 12. C | 13. E | 14. A | 15. C |
| 16. C | 17. E | 18. D | 19. E | 20. E |
| 21. B | 22. E | 23. E | 24. C | 25. A |

## 7. In Summary

The AluVET project addresses the need for comprehensive training in the light metals sector, particularly aluminium production and design processes, which are lacking in the existing vocational education and training (VET) modules at the high school level in participating countries. The project aims to enhance the skills and proficiencies of educators and students in the metal technology field, aligning with industry demands and introducing digital and soft skills training. By creating industry-tailored training programs and an interactive online platform adhering to ECVET standards, the project seeks to bridge the gap between VET providers and industry requirements.

The project recognizes the absence of comprehensive competence assessments for blue-collar workers in the light metals industry. To address this, comprehensive competence tests are being developed in collaboration with industry experts and representatives. These tests aim to assess skills and proficiency gaps, ensuring that individuals have the necessary qualifications to contribute effectively to the industry. This initiative extends to trainers as well, enhancing their awareness of curriculum gaps and promoting a more skilled workforce.

The competence tests are intended for a diverse audience, including blue-collar workers, technical professionals, supervisors, managers, students, apprentices, trainers, and industry professionals seeking to test their skills in the aluminium sector. The goal is to provide standardized assessments that measure proficiency, contributing to workforce development, job placement, and overall industry growth by ensuring individuals possess the required skills and knowledge to excel in their roles within the aluminium industry.

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